

Please amend the above-identified application as follows:

**Amendments to the claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please amend the claim set to read as follows:

1. (currently amended): A system for controlling a medical image data acquisition process, comprising ~~[[a]]~~ an image data acquisition apparatus controller for controlling image data acquisition apparatus to acquire medical image data from a subject;  
[[an]] a contrast agent administration controller for controlling a device to administer ~~[[an]]~~ the contrast agent to the subject;  
a medical image data processor for receiving the medical image data from the image data acquisition apparatus and processing it ~~to analyze in real time the behavior of the agent in the subject;~~  
a protocol controller for controlling the image data acquisition apparatus controller and the contrast agent administration controller ~~to adjust parameters in real time of the data acquisition process~~ in response to data from the medical image data processor, wherein the medical image data processor is adapted to process the medical image data to detect different phases of the contrast agent's biophysical behaviour in the subject and in turn to cause the protocol controller to control the contrast agent administration controller to change an amount of contrast agent administered to the subject and simultaneously to control the image data acquisition apparatus controller to change a mode of image data acquisition to acquire image data in at least two different modes, wherein the medical image data processor is adapted to perform real time analysis of the behaviour of the contrast agent in the subject to characterise an uptake and washout of the contrast agent thereby to provide pharmacokinetic parameters of the behaviour of the contrast agent, and to cease acquisition when the medical image data processor has all the pharmacokinetic parameters needed; and in that said controller is adapted to control the acquisition apparatus to perform said change of mode of image data acquisition to provide an optimized tradeoff between spatial and temporal resolution in said different

~~phases of the contrast agent's biophysical behaviour the analyzed real time behavior of  
the agent in the subject from the medical data processor.~~

2. (currently amended): A system according to claim 1 wherein the device to administer the contrast ~~[[an]]~~ agent to the subject is an automatic drug delivery device.
3. (currently amended): A system according to claim 1 wherein the contrast agent is a pharmaceutical agent.
4. (canceled)
5. (currently amended): A system according to claim ~~[[4]]~~ 1 wherein the ~~imaging agent is a~~ contrast agent ~~[[for]]~~ selectively ~~[[enhancing]]~~ enhances ~~[[the]]~~ a contrast of at least one region of the subject.
6. (currently amended): A system according to claim 1 wherein the image data acquisition apparatus is a spectroscopy apparatus and the medical image data processor is a spectral data processor for processing data acquired by the spectroscopy apparatus.
- 7-8 (canceled)
9. (currently amended): A system according to claim 1 wherein the protocol controller controls the contrast agent administration controller to control the type of contrast agent administered to the subject in response to processed medical data results from the medical data processor.
10. (canceled)
11. (currently amended): A system according to claim 1 wherein the protocol controller is responsive to additional data acquired from the subject independently of the medical image data acquisition apparatus.
12. (currently amended): A system according to claim 1 wherein the medical image data is acquired *in vivo* from a human, animal or plant as said subject.

13. (currently amended): A system according to claim 1 wherein the medical image data is acquired *in vitro*.